

Date:

Title: 4.1 A Formula for Slope

Objective: To learn how to calculate slopes with slope triangles and the slope formula, also to learn about slopes of rising, falling, horizontal and vertical lines.



IN:

1. Simplify the expressions: a. $\frac{2-3}{-4+1}$ [] b. $\frac{-2-1}{2+(-3)}$ []

2. What is the average speed of a plane that flies 2629 miles in 5.5 hours? []

3. A moving company one year had an income of \$930,500. The number of moving jobs was 882. What was the average rate per job? []

Investigation

Hector's Internet Provider

Internet Use

Month	Time (h)	Total fee (\$)
September	40	16.55
October	50	19.45
November	80	28.15

Hector recently signed up with a limited-usage Internet provider. There is a flat monthly charge and an hourly rate for the number of hours he is connected during the month. The table shows the amount of time he spent using the Internet for the first 3 months and the total fee he was charged.



Hector's Internet Provider

Internet Use

Month	Time (h)	Total fee (\$)
September	40	16.55
October	50	19.45
November	80	28.15

- Step 1 - Is there a linear relationship between the time in hours that Hector uses the Internet and his total fee in dollars? Why do you think so?



Hector's Internet Provider

Internet Use

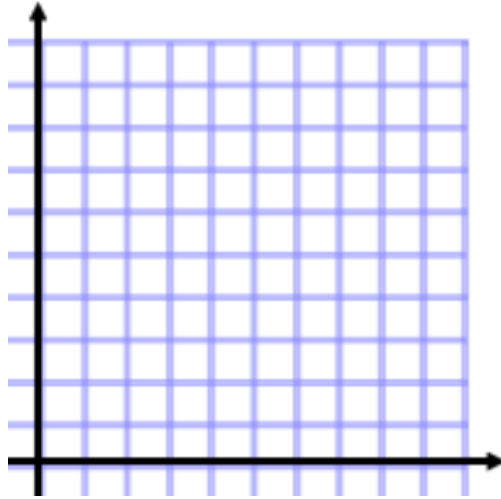
Month	Time (h)	Total fee (\$)
September	40	16.55
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- Step 2 - Use the numbers in the table to find the hourly rate in dollars per hour. Explain how you calculated this rate.



Step 3 -

- On the graph, use the x-axis for time in hours and the y-axis for total fee in dollars.
- Plot and label the three points the table of data represents.
- Draw a line through the three points.
- Does the line support your answer in Step 1?



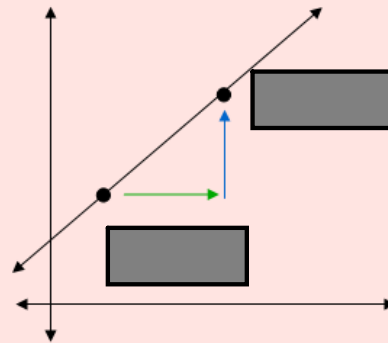
Step 4 - Choose 2 points on your graph. Use arrows to show how you could move from one point to the other using only one vertical move and one horizontal move. How long is each arrow? What are the units for each length?

- Step 5 - Remember your answer to step 2? How can you use the two lengths you found in Step 4 to get that same answer?

You have just made a slope triangle!!

Slope of a line - $\frac{\text{rise}}{\text{run}}$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



EX 1 - Find the slope of the line passing through the points:

- a. $(-3, 0)$ and $(-1, 6)$ b. $(1, 7)$ and $(6, 4)$

Ex 2 - Find the coordinates of another point on the same line as the points in Ex 1.

hint! the change in y was 3 and the change in x was 1...so change x and y!!

Types of Slopes

positive



negative



zero



undefined

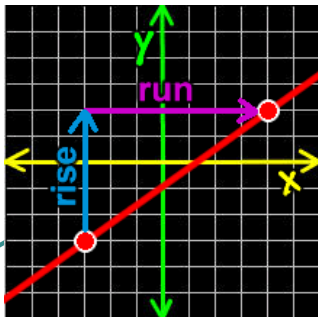


EX 3 - You are typing a paper. At 5:15 you have typed 275 words. By 5:27 you have typed 660 words. Find the average rate of change in words per minute.

SUMMARY:

Today I learned...OR

I would like to know more about...



OUT:

Write and solve a new slope problem!

HW - Page 220-222
#1,2,3,5,6,7,10

Investigation • Points and Slope

Name _____ Period _____ Date _____

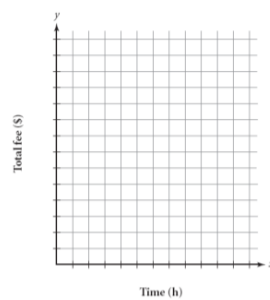
Hector recently signed up with a limited-usage Internet provider. There is a flat monthly charge and an hourly rate for the number of hours he is connected during the month. The table shows the amount of time he spent using the Internet for the first three months and the total fee he was charged.

Step 1 Is there a linear relationship between the time in hours that Hector uses the Internet and his total fee in dollars? If so, why do you think such a relationship exists?

Internet Use		
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Step 2 Use the numbers in the table to find the hourly rate in dollars per hour. Explain how you calculated this rate.

Step 3 Plot and label the three points the table of data represents. Draw a line through the three points. Does this line support your answer in Step 1?



Investigation • Points and Slope (continued)

Step 4 Choose two points on your graph. Use arrows to show how you could move from one point to the other using only one vertical move and one horizontal move. How long is each arrow? What are the units of these values?

Step 5 How do the arrow lengths relate to the hourly rate that you found in Step 2? Use the arrow lengths to find the hourly rate of change, or slope, for this situation. What units should you apply to the number?

In Step 4, you used arrows to show the vertical change and the horizontal change when you moved from one point to another. The right triangle you created is called a **slope triangle**.

Step 6 Choose a different pair of points on your graph. Create a slope triangle between them and use it to find the slope of the line. How does this slope compare to your answers in Step 2 and Step 5?

